

Serial No. 10/688,694
Amendment Under 37 CFR §1.111
Response to Office Action dated May 11, 2006

REMARKS/ARGUMENTS

Reconsideration and withdrawal of the rejections set forth in the above-identified Office Action are respectfully requested.

The undersigned acknowledges with appreciation the telephone discussion held with Examiner Daniels on July 10, 2006, and for the courtesies extended by the Examiner. During the telephone conversation, the rejections set forth in the Office Action were reviewed, as well as the applied references. The substance of the telephone interview is accurately stated in the Interview Summary dated July 17, 2006 provided by Examiner Daniels.

It is respectfully submitted that the present claims are patentable for the reasons set forth below.

In accordance with this Amendment, the previously presented claims have been canceled in favor of new claims 30-39 which recite preferred embodiments of Applicant's invention. Specifically, these claims recite that the temperature of the casting roll is from about 100 to about 175 °F, support for which can be found, for example, at page 4, line 30 of the Specification. In addition, the claims recite that the crystallinity of the PCTFE film prior to stretching is from about 20 to about 30% as measured by X-ray diffraction; support for this feature can be found, for example, at page 5, lines 23-25 of the Specification. The claims also recite that the film is oriented between a slow and a fast draw roll at a draw ratio of from about 1.5 to 5:1, or from about 2:1 to about 3:1, or from about 2:1 to about 2.5:1; support for these features is found, for example, at page 5, lines 6-9 and page 6, lines 6-9 of the Specification. Likewise, the claims recite that the film is oriented monoaxially, as previously claimed in claim 11. The claims further recite that the resulting film has a thickness of from 0.2 to about 5 mils, or from about 0.5 to about 2 mils; support for this feature appears, for example, at page 6, lines 18-19 of the

Serial No. 10/688,694
Amendment Under 37 CFR §1.111
Response to Office Action dated May 11, 2006

Specification. The claims additionally recite that the temperature of the relatively slow casting roll ranges from about 75 to about 200 °F, and the temperature of the relatively fast draw roll is in the range of about 200 and about 240 °F; support for these features appears, for example, at page 5, lines 5-7 and 12 of the Specification. The claims further recite that the resulting film exhibits a water vapor transmission rate per mil of less than about 0.015 g/100 in²/day as measured by ASTM F1249 at 37.8 °C and 100% RH; support for this feature appears, for example at page 7, lines 5-10 of the Specification.

With this Amendment, there are presently presented a total of 10 claims, including 2 independent claims (claims 30 and 37). Dependent claims 31-34 are similar to canceled claims 4, 5, 7 and 29, respectively. Dependent claims 38 and 39 are similar to canceled claims 7 and 29, respectively. Dependent claim 35 is similar to canceled claim 15 and also recites that the temperature of the preheat roll ranges from about 50 to about 250°F, support for which appears, for example, at page 5, line 1 of the Specification.

It is respectfully submitted that claims 30-39 are patentable and should be allowed.

The thoroughness of the review of this application by Examiner Daniels is again appreciated. Applicant also acknowledges with appreciation the withdrawal of the finality of the previous rejection as well as the withdrawal of the previous 35 USC §112 rejection.

The claims stand rejected under 35 USC §103 (a), based on the combination of Mizuno et al. (USP 5,833,070) in view of the articles to Choy and Khanna, and additionally (with respect to some claims) USP 4,677,017 to DeAntonis. These rejections are respectfully traversed, and it is submitted that claims 30-39 patentably distinguish over the proposed combination of references.

Serial No. 10/688,694
Amendment Under 37 CFR §1.111
Response to Office Action dated May 11, 2006

For completeness, the remarks of the previous Amendment are incorporated herein in their entirety.

Mizuno has been replied upon as the primary references in the rejection. It is respectfully submitted that Mizuno alone, or in combination with the other references, does not teach or suggest the invention of claims 30-39. As previously pointed out, Applicant submits that the starting point of any rejection should properly be based on USP 4,544,721 to Levy, which discloses that prior to stretching, a film of PCTFE needs to be substantially amorphous. This is in contradistinction to the claimed invention which calls for such film to be crystalline, and is now specifically recited as having a crystallinity of from about 20 to about 30%, as measured by X-ray diffraction.

It is respectfully submitted that the prior art must be considered in its entirety, including disclosures that teach away from the claims. See MPEP § 2141.02 VI and the citation therein to *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), *cert. denied*, 469 U.S. 851 (1984). Interestingly, in the *Gore* case, it was held that an invention was not obvious in light of disclosures in the prior art that, *inter alia*, a polypropylene should have reduced crystallinity prior to stretching whereas the claims called for stretching of a highly crystalline PTFE. Likewise, it is submitted that the present claims are patentable at least for the reason that the prior art does not teach stretching a crystalline PCTFE film in the manner called for in the instant claims.

Referring again to Mizuno, this reference is directed to a process of making a stretched PCTFE film which has good moisture resistance at a relatively small thickness. Mizuno requires a specific high molecular weight starting resin as well as relatively low temperature processing of the resin into film. As pointed out at column 5, lines 13-15 of Mizuno, the starting resin has a melt flow rate of 1×10^{-3} to 3×10^{-2} cc/sec. The translates into a very high molecular weight resin which is more difficult to process.

Serial No. 10/688,694
Amendment Under 37 CFR §1.111
Response to Office Action dated May 11, 2006

More typical PCTFE resins have molecular weights on the order of $\frac{1}{2}$ of that of Mizuno. Mizuno points out that higher melt flow rate (lower molecular weight) resins are not desirable in the low temperature stretching process of that invention (see column 5, lines 21-27). Furthermore, Mizuno states at column 5, lines 56-63 that higher melt flow rates mean that the film is liable to be broken before necking propagates over the entire sheet. Specifically, the reference points out that:

“Further, a lower molecular weight promotes crystallization so that it becomes difficult to obtain a stock sheet having a low crystallinity, thus making stretching difficult.” [column 5, lines 60-63]

It is submitted that this statement clearly indicates that Mizuno does not want the film to be crystalline when it is stretched. Indeed, the reference expressly states that its process is to suppress crystallization (see column 6, lines 4-5). Mizuno never mentions the degree of crystallinity of the film prior to stretching, but clearly an amorphous film is required.

In its examples, Mizuno uses a small extruder (35 mm diameter), which typically is a bench top type of extruder that has limited throughput. The resin of Mizuno is stated to be formed into a film on a cooling drum having a temperature of 25 °C (see column 9, line 11 et seq.). From Table 1 of Mizuno it can be seen that in Example 3 a film is made by extruding at 305 °C, and then stretching to a ratio of 9:1 by a sequential biaxial orientation (3x3). The film prior to stretching had a thickness of 180 μm . This film, which was not heat set as opposed to the films of the other examples in the table, is indicated as having a crystallinity of 18%. Since it is recognized that stretching increases the percent crystallinity, it is clear that the starting film material of Mizuno must have a percent crystallinity much lower than 18%. Certainly the crystallinity of the starting film cannot be above 18%, and from the Murthy article of record it is known that crystallinity levels as low as 11% have been measured on PCTFE films. These levels are in contrast to the higher crystallinity levels before stretching that are set forth in claims 30-39.

Serial No. 10/688,694
Amendment Under 37 CFR §1.111
Response to Office Action dated May 11, 2006

Moreover, in contrast to Mizuno, the present claims recite that process includes extruding onto a casting roll maintained at a temperature of from about 100 to about 175 °F which is considerably higher than the 25 °C temperature of Mizuno's casting roll. The very cold casting roll temperature of Mizuno is difficult and more costly to operate in a commercial environment.

Furthermore, it is not seen where Mizuno combines this higher casting roll temperature with (a) monoaxial orientation, (b) use of slow and fast stretch rolls, (c) a temperature of about 75 to about 200 °F for the relatively slow stretch roll, (d) a temperature of about 200 and 240 °F for the relatively fast stretch roll, and (e) the production of a film having a thickness of from about 0.2 to about 5 mils which has a water vapor transmission rate per mil of film of less than about 0.015 g/100 in²/day as measured by ASTM F1249 at 37.8 °C and 100% RH.

Rather, Mizuno employs a biaxial orientation on equipment that is not mentioned, but is carried out at temperatures of 70 and 60 °C, so that the maximum temperature during stretching is 158 °F. It is also pointed out that the water vapor transmission rates in Mizuno are measured at 90% RH, as opposed to the more stringent 100% RH set forth in the instant claims.

Overall, it can be seen that the process of Mizuno requires a high molecular weight resin, very precise control over the casting and stretching operations, and a very slow line speed that would not be suitable for commercial operations.

Accordingly, for the above reasons it is submitted that Mizuno does not disclose or suggest the process of Applicant's invention – not only the starting crystallinity but the other conditions mentioned above that are recited in claims 30-39. Therefore, it is respectfully submitted that claims 30-39 are patentable over Mizuno.

Serial No. 10/688,694
Amendment Under 37 CFR §1.111
Response to Office Action dated May 11, 2006

It is respectfully submitted that the secondary references do not supply all of the claimed features that are missing from Mizuno.

The Examiner's attention is respectfully directed to the discussion appearing in the previous amendment regarding each of the secondary references. In addition, the following remarks are made.

In the Office Action there is mention of the disclosure at Choy on page 572 wherein it is indicated that for comparison there was shown a sample having a crystallinity of 21% which was prepared by quenching a "very thin film" (0.3 mm, or about 12 mils) from the melt to room temperature. Although such film is thinner than the plaques mentioned in other places in the Choy article, this still does not provide guidance as to what was the crystallinity of the film of Example 1 of Mizuno prior to stretching. More importantly, as pointed above, Example 3 of Mizuno states that the crystallinity of a stretched but not heat set film is 18%, and thus the crystallinity of the film prior to stretching must be lower than that number.

The brief statement in Choy at page 572 regarding a sample with a crystallinity level of 21% does not suggest the present invention as claimed in claim 30-39. Choy quenches his sample to room temperature, rather than at a temperature of about 100 to about 175 °F as claimed herein. Choy does not suggest quenching a film onto a casting roll as Choy prepares its samples by compression molding. Choy does not suggest stretching this sample, or stretching using slow and fast stretching rolls, while holding the film under tension, at the temperatures claimed herein. Choy does not teach a stretched film having a thickness of from about 0.2 to about 5 mils. Choy does not even remotely mention a process that provides a film which has an improved WVTR, or a WVTR within the range of less than about 0.015 g/100 in²/day as measured by ASTM F1249 at 37.8 °C and 100% RH per mil of film.

Serial No. 10/688,694
Amendment Under 37 CFR §1.111
Response to Office Action dated May 11, 2006

It is submitted that Khanna is not any more pertinent than is Choy, for the reasons stated in the previous Amendment.

It is not seen how both Choy and Khanna are properly combinable with Mizuno. There is nothing to suggest to one skilled in the art that any of their teachings (including quenching temperatures or the like) would be applicable to the process of Mizuno. If these references are intended to show an inherency of certain characteristics of Mizuno, they still fail to do so since the thicknesses are different, as is the type of resin employed. The most that can be said for Choy and Khanna are that they are scientific studies which include discussions of crystallinity of PCTFE resins. However, that is not enough to either be combinable with Mizuno or to supply the features missing in Mizuno.

Furthermore, it is submitted that even if it were proper to combine both Choy and Khanna with Mizuno, all of the features missing from Mizuno would still not be shown, and thus the claimed invention would not result.

Regarding DeAntonis, this patent is directed to processing a laminate which includes a fluoropolymer layer and a thermoplastic resin layer. Although DeAntonis shows orientation using slow and fast stretch rolls, the reference does not show the processing conditions set forth in the instant claims for PCTFE resin films, much less monolayer PCTFE films. Clearly DeAntonis does not disclose casting a PCTFE resin film so that the crystallinity is about 20 to 30%, and processing the film in accordance with the other steps of present claims 30-39 to achieve a film having the properties set forth in the claims. As such, it is respectfully submitted that DeAntonis does not supply the various features missing from Mizuno, or from the proposed combination of Mizuno with Choy and Khanna.

For the above reasons, it is respectfully submitted that the claims are patentable over the proposed combination of references.

Serial No. 10/688,694
Amendment Under 37 CFR §1.111
Response to Office Action dated May 11, 2006

In rebuttal to the comments made in the Office Action regarding limitations of an intermediate state material, it is pointed out that it has been long recognized that the materials on which a process is carried out must be accorded weight in determining the patentability of a process. See MPEP § 2116, and *Ex parte Leonard*, 187 USPQ 122 (Bd. App. 1974) cited therein.

It is axiomatic that all claim limitations must be taught or suggested to establish obviousness of a claimed invention (see MPEP § 2143.03). Likewise, the claimed invention as a whole must be considered (see MPEP § 2141.02 I, citing *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976)).

What Applicant has discovered is a process which provides a PCTFE film that has excellent WVTR properties. It is respectfully submitted that to be patentable, the film itself resulting from the claimed process need not be superior in properties to previous films. Rather, the proper question is whether the process steps claimed in the instant claims are different from the prior art, and whether such differences are nonobvious over the prior art. It is respectfully submitted that it has been shown by the above discussion that the process steps claimed in claims 30-39 are different from any of the applied references. Likewise, it has been shown that the claimed process steps are not obvious over the prior art processes. That is all that is necessary to establish patentability of a process, such as the process claimed by Applicant. To obtain even the same product by unobvious steps in a process is indeed patentable.

Therefore, Applicant respectfully urges that all of the present claims are patentable over the proposed combination of references.

In the Office Action, reference was made to prior claim 28 which recited a process which included the step of orienting the film "without winding up said PCTFE polymer film". The rejection cited *In re Dinot*, 319 F.2d 188, 138 USPQ 248 (CCPA

Serial No. 10/688,694
Amendment Under 37 CFR §1.111
Response to Office Action dated May 11, 2006

1963) for the proposition that the difference between a batch process and a continuous process is *prima facie* obvious, and made reference to MPEP § 2114 (III) E [it is believed that the intended citation was to MPEP § 2114 (V) E]. The following remarks are made to the extent that such a rejection may be made against claims 37-39. It is respectfully submitted that *In re Dinot* is inapposite to the present situation. In the cited case, foam was previously added in a single instance as a batch operation and the improvement was to add the foam continuously. In the instant situation, Applicant is claiming an in-line process where the film is continuously made and then continuously stretched. This is in distinction to a process wherein a film is continuously made, moved to another line, and then continuously stretched. Hence, the analogy to a batch-continuous process is submitted to be inappropriate. The fact that the process can be practiced in-line frees up valuable space in a commercial plant environment and facilitates quality control over the entire process from extrusion to stretching. Accordingly, it is submitted that claims 37-39 are further patentable over the combination of references employed in the previous rejection.

In addition, it is submitted that the feature of dependent claims 34 and 39 that the stretch ratio is in the range of from about 2.1 to about 2.5:1 is not shown in Mizuno, since Mizuno requires a stretch ratio of at least 3 times (see column 6, line 9). Likewise, it is submitted that the feature of dependent claim 35 which recites the temperature of a preheat roll is not taught or suggested by Mizuno or the other references. Accordingly, these claims are submitted to be further patentable over the applied references.

Claims 30-39 recite specific process steps that Applicant has found to provide stretched PCTFE films with excellent WVTR properties. It is submitted that the combination of the process steps of these claims is unique and not taught or disclosed in the applied prior art.

Accordingly, it is most respectfully submitted that since the process as claimed in claims 30-39 is not anticipated by the cited prior art and is not obvious over the cited

Serial No. 10/688,694
Amendment Under 37 CFR §1.111
Response to Office Action dated May 11, 2006

prior art, such claims are patentable. Their allowance is submitted to be proper and is most respectfully solicited.

Applicant therefore respectfully requests reconsideration of the previous rejections and allowance of this application. Early notification to that effect is earnestly solicited.

Should the Examiner believe that a discussion with the undersigned would in any way be of assistance, he is respectfully requested to telephone the undersigned.

Respectfully submitted,
Carl E. Altman

By: Roger H. Criss
Roger H. Criss
(His Attorney)
Reg. No. 25,570
(239) 254-0971

Attachments

Roger H. Criss
1462 Via Portofino
Naples, FL 34108